

## Cervical synovial cyst: case report and review of literature

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**Abstract** Synovial cysts, typically observed in the lumbar spine eventually associated with degenerative changes of the facet joints, only rarely present in the cervical spine. Up to now, only 28 symptomatic cases are described in literature. Typically, the treatment of these cases is a decompressive laminectomy followed by complete surgical removal of the lesion. The authors present the case of an 84-year-old man with a symptomatic synovial cyst involving the space between C7 and T1.

**Keywords** Cervical cyst · Cervical compression · Synovial cyst · Symptomatic cyst

### Introduction

Extradural intraspinal synovial cysts (SC) of the cervical spine are a very rare entity and only 28 symptomatic cases have been described in literature [2, 6–8, 10, 11, 14, 16, 17]. They typically occurred in the cervical region at C1–C2 junction or in the space adjacent to the facet joints in the lower cervical spine. The pathogenesis of SC is still unclear and several hypotheses have been proposed [19]. Possible mechanisms described are mechanical stressed joints inducing up regulation and release of inflammatory factors resulting in the creation of the cyst [13] or extrusion of synovium through the joint capsule (possibly secondary to a trauma or instability). Traumatic events are described

as being involved in cyst enlargement due to haemorrhaging into the cavity of the cysts, resulting in epidural compression of the medulla or spinal roots [4, 9, 18]. The treatment of choice for symptomatic cervical SC is surgical excision. The authors present the case of a symptomatic synovial cyst of the lower cervical spine (C7–T1).

### Case report

An 84-year-old man, presents a 2-month history of cervico-brachialgia to the right arm and progressive hypostenia of the right arm. No traumas were referred. Neurological examination at admission showed a hypotrophy of the interosseous muscles of the right hand and hypostenia of the right biceps and triceps muscle. No signs of myelopathy or sensory deficits were found.

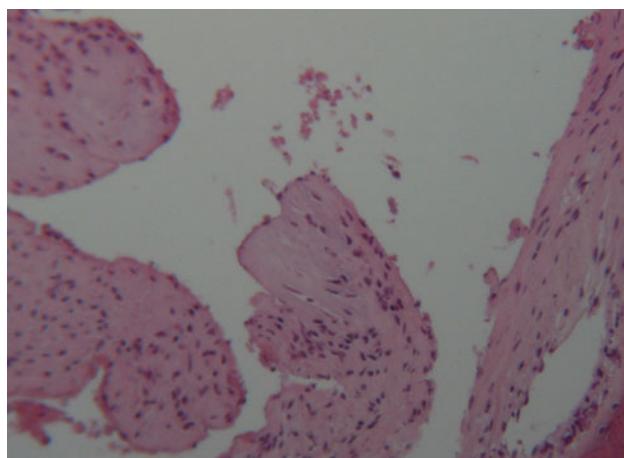
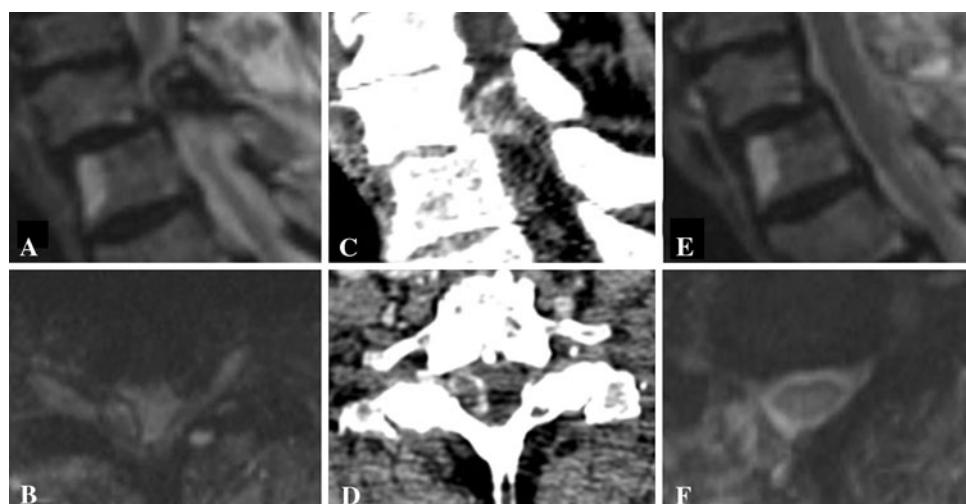
Pre-operative Magnetic Resonance (MR) imaging and Computed Tomography (CT) scans of the cervical spine showed an extradural lesion with a right lateral extension between C7 and T1, without any spinal cord compression: an increased T2 signal intensity and a low to moderate T1 signal intensity were detected. No evidence of contrast enhancement was detected in the MRI, while CT scans images revealed a round peripheral enhancement of the cyst wall (Fig. 1).

The patient underwent a posterior approach with a complete right hemi-laminectomy of C7 and partial laminectomy of C6 and T1. The cyst lesion was completely removed. The histological exam showed a cystic formation with thin fibrous walls covered by synovial lining with diagnosis of synovial cyst (Fig. 2).

After surgery, the patient showed a rapid pain regression and good improvement of distal hypostenia after physiotherapy.

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**Fig. 1** **a, b** (Sagittal–assial) pre-operative T2 weight MRI: right extradural lesion between C7 and T1; **c, d** pre-operative CT scan after contrast injection: enhancement of the cyst wall; **e, f** post-operative T2-weight MRI control: complete removal of the syovial cyst



**Fig. 2** Photomicrography showing thin fibrous wall covered by pavimented cells, compatible with SC

## Discussion

Symptomatic SC of the spine are rare. They are usually localised in the lumbar spine and typically occur in the fifth to sixth decades of life, having no gender predominance. L4–L5 and L5–S1 are the most frequently affected levels. The cervical spine is a less common site for synovial cysts. Typically, the cyst has an extradural intraspinal extension arising from the facet joints, but a case of intraosseous extension of the cyst has been described [13]. Radiological differential diagnosis with neurinoma or epidural abscess must be considered. MR and CT scan with and without contrast agents are both used [1, 5, 12, 15, 20, 21]. These lesions are usually asymptomatic, but are generally assumed slow growing, with symptoms gradually increasing over a period of months or years. Rapid deterioration of the symptoms may be secondary to traumatic events leading to a haemorrhage into the cyst walls. A review of the literature revealed only 28 symptomatic cervical

synovial cysts. Symptoms range from pain to radiculopathy or myelopathy.

The natural history of a synovial cyst is unpredictable, and some patients experience improvement or stabilization of their symptoms without surgery also when it arises in cervical spine [3]. With small size cysts or mild symptoms, careful management, with conservative treatment, is mandatory. Surgical treatment must be considered in the case of worsening of symptoms or in presence of neurological deficits; complete excision of the cyst mass is the treatment of choice and typically results in a favourable outcome. No recurrence with open surgery has been described.

**Conflict of interest statement** None of the authors has any potential conflict of interest.

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